

percentile intake rate of 1.22 g/kg body weight per day for western United States households (1.22 g/kg-day \times 15 kg = 18.3 gpd) (Table 13-41 in EPA, 2011).

The 69 gpd and 13 gpd adult and child intake values have uncertainties and caveats associated with them, including the fact that they represent a 7-day survey period conducted during a 1987-1988 Nationwide Food Consumption Survey, they do not account for variations in eating habits during the rest of the year, and they do not include cooking losses. Although mean cooking losses for meat have been estimated to be as elevated as 29.7 percent (Table 13-69 in EPA, 2011), uncertainties with these types of losses (due to drippings and volatile losses during cooking) are high, and it is conservatively assumed that such losses do not occur for recreational user game intake.

In the absence of other readily-available survey data, these game intake rates of 69 gpd and 13 gpd adult and child, respectively, are recommended for waterfowl hunting.

6.3.3 Agricultural Worker Exposures

Exposure factors for this receptor group are summarized in **Attachment B-1a, Tables 4.1, 4.12, and 4.27**.

The agricultural worker is assumed to be representative of all workers, including commercial/industrial workers. Exposure factors for this receptor are primarily from EPA's OSWER Directive, Human Health Evaluation Manual, and Supplemental Guidance: Update of Standard Default Exposure Factors (2014b), for an outdoor worker.

6.3.4 Traditional Tribal Exposures

Exposure factors for this receptor group are summarized in **Attachment B-1a, Tables 4.4, 4.5, 4.6, 4.7, 4.13, 4.14, 4.15, 4.16, 4.21, 4.22, 4.23, and 4.24**.

Most of the receptor-specific traditional tribal exposure factors are from the Traditional Tribal Subsistence Exposure Scenario and Risk Assessment Guidance Manual (EPA, 2007a) and Washoe Tribe Human Health Risk Assessment Exposure Scenario for the Leviathan Mine Superfund Site (Harper, 2005). It should be noted that the Harper (2005) study for the Washoe Tribe is actually contained in EPA (2007a). A tribal youth (ages 7-16), instead of a younger child, is selected because a youth is more likely to be more actively involved in the exposures quantified in the HHRA, including hunting of waterfowl and small game, fishing, gathering of local plants, and wading in surface water.

Exposure factors for the youth are from EPA's Exposure Factors Handbook: 2011 Edition (2011), specifically the average body weight of 44.3 kg for a 6- to <11-year old and an 11- to <16-year old. For a youth wading in surface water, the average body surface area of 0.98 square

meters (m^2) or 9,800 square centimeters (cm^2) is used for a 6- to <11-year old and an 11- to <16-year old, based on assumed arms, hands, legs, and feet (95th percentile values) contacting the water.

For a youth exposed to soil or dry sediment, an average body surface area of $4,065 \text{ cm}^2$ is used for a 6- to <11-year old and an 11- to <16-year old, based on application of a ratio of 0.674 to the EPA (2014b) recommended default residential skin area of $6,032 \text{ cm}^2$ for soil exposure. This ratio of 0.674 is the ratio of total skin area of a 6- to <16-year old to an adult (21- to <60-year old), based on data from Table ES-1 Chapter 7 in EPA (2011) ($1.335 \text{ m}^2/1.98 \text{ m}^2$). This average exposure area is based on the assumption that exposed body parts consist of the head, forearms, hands, and lower legs (EPA, 2014b).

A distinction is made between exposures to impacted media on the Reservation compared with off-reservation exposure. On reservation exposure conservatively assumes an exposure frequency of 365 days per year to surface soil (and sediment), air, surface water, local plants, gamefish, waterfowl, and small game. Exposure of tribal members to impacted media off the reservation assumes an exposure frequency of 37 days per year (10 percent of the time). A lower exposure frequency to off-reservation impacted media is reasonable due to the distance from tribal residences on the Reservation to off-reservation areas such as Lahontan Reservoir, SNWR, and other areas along the Carson River. An off-reservation exposure frequency of 37 days per year is still considered reasonably protective, especially for some exposure pathways such as the ingestion of surface water (recommended by EPA, 2007a, and Harper, 2005, to be 3 liters per day) and the incidental ingestion of soil (recommended by EPA, 2007a, and Harper, 2005, to be 400 milligrams per day). As there is uncertainty in the selection of the off-reservation exposure frequency of 10 percent (particularly for hunting, fishing, and plant gathering activities), the HHRA uncertainty section includes a semi-quantitative sensitivity analysis that evaluates higher exposure frequencies (such as 25 percent [91 days per year]).

Traditional Tribal Food Intake: The receptor-specific traditional tribal food intake exposure factors are from EPA (2007a) and Harper (2005). Plant intake is 1,936 gpd, adding together the separate intakes of 80 gpd for pine nuts, 300 gpd for roots, tubers, etc., 300 gpd for bulbs, 333 gpd for berries, fruit, and garden vegetables, 833 gpd for greens, 50 gpd for seeds and grain, and 40 gpd for honey, teas, etc. Small game intake is 180 gpd, based on the recommended value for game or livestock. Waterfowl intake is 40 gpd, based on the recommended value for fowl and eggs. Freshwater game fish intake is set at 200 gpd to be reasonably protective, based on the recommended value for combined finfish and shellfish. As noted previously, it is conservatively assumed that local fish ingestion does occur, even though fish consumption advisories are posted throughout OU2 by the Nevada Division of Environmental Protection, based on recommendations of the Nevada State Health Division (Nevada Department of Wildlife, 2012).